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IN THE CLAIMS:

Please amend the claims as follows:

1. (Currently amended) A fractional multi-modulus prescaler comprising:

a polyphase filter having an input for receiving an input frequency signal and for producing one or more output phase signals each of said one or more output phase signals having the same frequency as the polyphase filter input frequency signal and a phase difference of 90 degrees relative to one another;

a multiplexer coupled to said polyphase filter for selecting said one or more output phase signals in response to a multiplexer control signal;

an asynchronous divide-by-N divider coupled to said multiplexer and having an input for receiving said one or more multiplexer selected output phase signals and for generating an output frequency signal;

a phase control for generating said multiplexer control signal in response to the presence of an input D-CTRL word signal, a MOD signal and a feedback signal generated by said divide-by-N divider, whereby the frequency of said divide-by-N divider output frequency signal is a desired fractional multiple of the frequency of said input frequency signal.

2. (Previously presented) The fractional multi-modulus prescaler as defined in claim 1, wherein said phase control is disabled in response to a "low" MOD signal, whereby the division ratio is N.

3. (Previously presented) The fractional multi-modulus prescaler as defined in claim 1, wherein said phase control is enabled in response to a "high" MOD signal to generate said multiplexer control signal.

4. (Previously presented) The fractional multi-modulus prescaler as defined in claim 3, wherein said phase control generates said multiplexer control signal in accordance with the value of said D-CTRL word signal and said divide-by-N divider feedback signal, whereby said multiplexer selects from said one or more output phase signals an output phase signal corresponding to said D-CTRL word signal.

5. (Currently amended) The fractional multi-modulus prescaler as defined in claim 4, wherein the division ratio of the fractional multi-modulus prescaler is N + C/4, where the value of C corresponds to the number of changes of the multiplexer control signal in one period of the output frequency signal.

6. (Original) The fractional multi-modulus prescaler as defined in claim 5, wherein the division ratio is N + 1 when the multiplexer control signal changes four times in one period of the output frequency signal.

7. (Original) The fractional multi-modulus prescaler as defined in claim 1, wherein the input frequency signal is a differential signal.

8. (Previously presented) The fractional multi-modulus prescaler as defined in claim 5, wherein said multiplexer selects from said one or more output phase signals a desired one of said output phase signals more frequently to increase the division ratio and less frequently to lower the division ratio.

9. (Currently amended) A fractional multi-modulus prescaler for use in a phase locked loop fractional-N frequency synthesizer comprising:

means for providing a quadrature signal from the frequency synthesizer output frequency signal having the same frequency as the frequency synthesizer output frequency signal;

means for selecting at least one phase signal of said quadrature signal in accordance with a phase select control signal corresponding to the number of the modulus;

means for applying a division function to the selected phase signal of said quadrature signal for each of the phase signals selected during a modulus time period, said modulus time period being defined as starting from an original selected phase signal and returning to the original selected phase signal; and

means for returning said phase selecting means to the original selected phase prior to said phase selecting means responding to a subsequent phase select control signal, whereby the generation of multi-modulus spurious frequency signals is prevented.

10. (Currently amended) The fractional multi-modulus prescaler as defined in claim 9, wherein a selected phase signal of said quadrature ~~signals are~~ signal is selected more frequently to increase the ratio of the division function and less frequently to decrease the ratio of the division function.

11. (Original) The fractional multi-modulus prescaler as defined in claim 9, wherein said phase selecting means selects two phases of the quadrature signal, whereby the multi-modulus prescaler is a dual-modulus prescaler.

12. (Original) The fractional multi-modulus prescaler as defined in claim 9, wherein said phase selecting means selects four phases of the quadrature signal, whereby the multi-modulus prescaler is a four-modulus prescaler.

13. (Currently amended) A method for providing a spurious frequency-free multi-modulus prescaler comprising the steps of:

providing a quadrature signal corresponding to the output frequency signal of a voltage-controlled oscillator in a phase locked loop fractional-N frequency synthesizer having the same frequency as the output frequency signal of the voltage-controlled oscillator;

selecting one or more phases of the quadrature signal in accordance with a phase select control signal corresponding to the number of the modulus;

applying a division function to the selected phase ~~signal~~ of the quadrature signal for each of the ~~phase signals~~ phases selected during a modulus time period to generate the desired fractional multiple of the input reference frequency; and

returning to an original selected phase of the quadrature signal prior to responding to a subsequent phase select control signal whereby the generation of multi-modulus spurious frequency signals is prevented.